

Imported Measles Case Investigation
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Jody Smith, MPH
Lead Epidemiologist Immunization Program



Measles

- Measles is a respiratory disease also called Rubeola
- Measles virus normally grows in the cells that line the back of the throat and lungs
- Causes fever, runny nose, cough, and a rash all over the body
- Often confused with Roseola and Rubella

Classic 4-Day Rash

Rash is described as:

- Red or Reddish Brown
- Blotchy
- Usually begins on face at hairline
- Spreads downward to neck, trunk, arms, legs, and feet



Complications

- 10% of children also get an ear infection
- 5% get pneumonia
- One out of 1,000 get encephalitis
- Kills nearly 200,000 people each year in the world
- Causes miscarriage or premature birth in pregnant women

Transmission and Incubation

- Measles is transmitted by direct contact with infectious droplets or, less commonly, by airborne spread
 - One of the most highly communicable infectious diseases
- Incubation Period
 - 8 to 12 days from exposure to onset of symptoms

Period of Communicability

- Infected persons are infectious from 1 day before the beginning of the prodromal period (usually 4 days before rash onset) to 4 days after rash appearance

Epidemiology

- Measles is rare in areas with high vaccination coverage
- Worldwide, approximately 20 million cases occur yearly
 - 164,000 deaths
 - More than half occurring in India
 - Sporadic cases occur due to travelers becoming infected before/during travel and infect unvaccinated persons

Epidemiology continued

- 44 measles cases have been reported to MMWR this year
- AR (1), CA (8), CT (1), DE (1), IN (15), KS (6), MI (1), NJ (1), NM (2), NYC (3), OR (1), PA (2), UT (2).
- 42 (89%) confirmed cases this year were import-associated
- To date, 3 measles outbreaks have occurred (≥ 3 cases that are linked in time or place), accounting for 52% of cases

Epidemiology continued

- 76% were unvaccinated or had undocumented vaccination status
- Of the 38 cases among US residents, 52% were unvaccinated, 21% had undocumented vaccination status, 13% had received 1 MMR, 10% had received 2 MMR, and 2% had received 3 MMR doses
 - Unvaccinated US residents with measles: 1 was foreign born, 1 was missed opportunity, 15 were PBEs, and 3 were too young.

Vaccination

- MMR: Measles, Mumps, and Rubella
 - 1st dose: 12-15 months of age
 - Can be given to infants 6 mo-11mo but not counted as valid dose towards 2-dose series recommendation
 - (i.e. travel related purposes)
 - 2nd dose: at school entry
 - Can be given earlier; 28 days after 1st dose (non-routine use)
- MMRV: MMR + Varicella
 - 2 years-12 years of age
 - 28 day interval for measles/90 day interval for varicella

Testing and Immunity

- Diagnosed by:
 - Positive serologic test result for measles immunoglobulin IgM antibody
 - Isolation of measles virus from clinical specimen (urine, blood, throat, or nasopharyngeal secretions)
 - Sig. increase in IgG antibody in paired acute and convalescent serum specimen

Outbreak Control

- Confirm suspect measles case via laboratory testing
- Promptly immunize people at risk of exposure or those already exposed w/o documented immunity
- Exclude people unimmunized or exempt from school, child care, and health care settings for 21 days after the onset of rash in the last case

Case Clinical History

- April 25, 2011
- 16 year old Foreign Exchange Student Presents to Kosair Children's Medical Center in Louisville
 - Rash around face and neck began that morning
 - Cough and sore throat began day before
 - No fever, coryza, or conjunctivitis
 - Patient's brother dx 3 weeks before with measles
 - Patient's antibody testing done in France showed immunity

Clinical History (continued)

- Patient believes she did not receive the measles vaccine (not required in France)
- Patient left France 11 days before
- Last saw her brother 11 days before
- Students are returning to France in 2 days
- Measles IgG and IgM drawn and strep screen taken
- Discharged home-suspect measles
 - No immunocompromised or infants under 1 in guest home

Contact Investigation

- Louisville Metro HD notified: April 25th
- Infectious Period: April 21-29
- Case isolated after diagnosis: April 25
- April 26th DLS reported a confirmed positive measles IGM antibody
 - Reports from France were found to be incorrect
 - Negative Measles IgG antibodies
- Exposure period for investigation: April 21-25

Contacts

- School Contacts
- Host Family
- Christian Church Congregation at April 23rd Easter Service
- Gatherings on 4/23 and 4/24 in private residences
- Patient did not travel during the infectious period and did not return until after her infectious period was over (4/29)

Care of Exposed Persons

- Measles vaccine (MMR or MMRV), given within 72 hours of exposure, may provide protection
- Immune globulin can be given intramuscularly to prevent infection in susceptibles within 6 days of exposure
 - Recommended for close contacts under age of 1, pregnant women, and immunocompromised

Recommendations

- 2 immunocompromised contacts referred to their physicians
- 17 year old in host family home received 2 MMRs but first dose was given before 1 year of age
 - Per CDC: exclude, titer, vaccinate
- S/S screen for 17 exchange students prior to returning home. All but case patient returned home as scheduled.

Recommendations continued

- KY School Investigation
 - 193 total faculty/staff
 - 83 had antibody testing
 - 6 w/o proof of vaccination and negative tests were excluded until end of infectious period
 - 3 pregnant teachers referred to their OBs
 - 917 students enrolled
 - 910 had documentation demonstrating vaccination
 - 7 students had antibody testing
 - 3 w/o proof of vaccination and negative tests were excluded until the end of the infectious period

